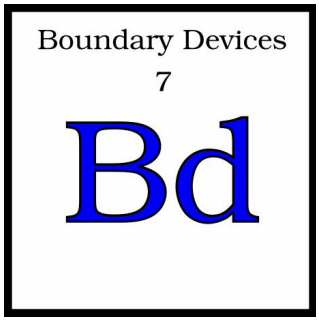
Nitrogen6X Hardware User Manual

Revision History

Date	Revision	Description
03-05-2012	1.0	First Draft



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2 Overview

Arrow Electronics and Boundary Devices are excited to announce the availability of the i.MX6x Nitrogen6X Board, a low-cost development platform featuring the powerful i.MX 6Quad Application Processor. The hardware specifications for the Nitrogen6X board are the following:

- Quad-Core ARM® Cortex A9 processor at 1GHz per core
- 1GByte of 64-bit wide DDR3 @ 532MHz
- Three display ports (RGB, LVDS, and HDMI 1.4a)
- Two camera ports (1xParallel, 1x MIPI CSI-2)
- Multi-stream-capable HD video engine delivering H.264 1080p60 decode,1080p30 encode and 3-D video playback in HD
- Triple Play Graphics system consisting of a Quad-shader 3D unit, and a separate 2-D and separate OpenVG Vertex acceleration engine for superior 3D, 2D and user interface acceleration
- Serial ATA 2.5 (SATA) at 3Gbps
- Dual SD 3.0/SDXC card slots
- PCIe port (1 lane)
- Analog (headphone/mic) and Digital (HDMI) audio
- 10/100/Gb Ethernet
- 10-pin JTAG interface
- 3 High speed USB ports (2xHost, 1xOTG)
- 1xCAN2 port
- I2C
- General Purpose I/O for Device Control

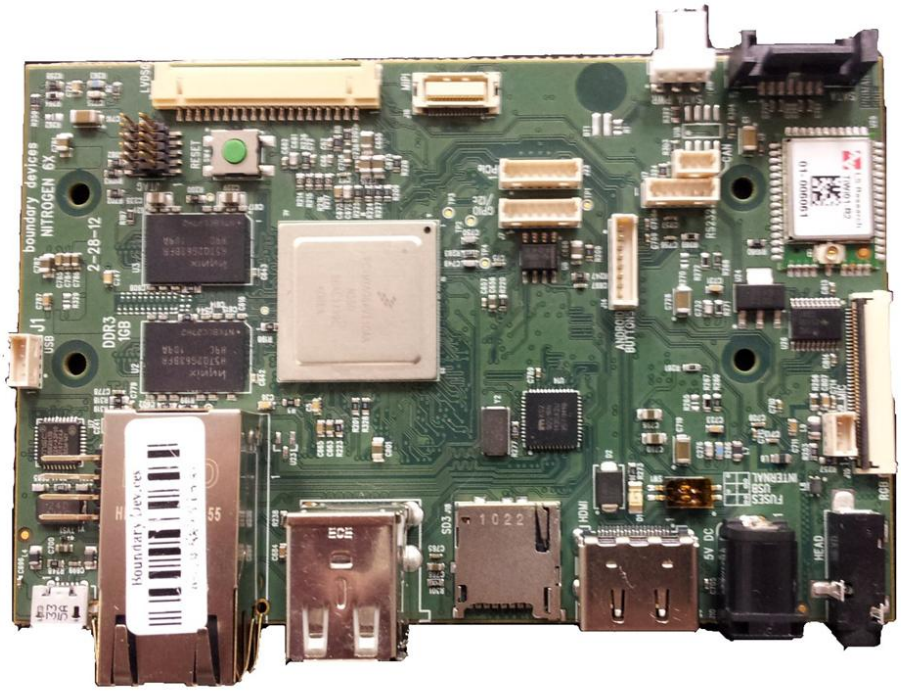
3 Electrical Characteristics

Parameter	Min	Typ	Max	Unit
Main Input Voltage	TBD	5	TBD	V
Power Consumption*	-	-	TBD	W
CPU Clock	-	1.0	1.0	GHz

*The Power Consumption refers to a single board with no other peripherals plugged in.

4 Connector Details

Figure 1 shows the details of each connector.



4.1 Standard Connectors

The list of industry standard connectors with known pin outs is the following:

Ref Designator	Function
J3	USB OTG
J4	HDMI (DVI Signals)
J8	Headphone Jack
J10	DC Power Jack
J18	microSD Slot 1
J20	microSD Slot 2
J21	SATA
J24	2xUSB Host
J25	10/100/1G Ethernet

4.2 Custom Connectors

The Nitrogen6X board has a wide variety of peripheral interfaces available via custom connectors.

J1: USB (Molex 53047-0410)

Pin#	Function
1	+5V
2	USBDN_DM3
3	USBDN_DP3
4	GND

J5: Camera (AVX 086210033340800)

Pin#	Function
1	GND
2	D19
3	D18
4	D17
5	D16
6	D15
7	D14
8	D13
9	D12
10	D11
11	D10
12	D9
13	D8
14	SCL
15	SDA
16	GND
17	GPIO_3_CLKO2
18	GND
19	2.5V
20	2.5V
21	2.5V
22	2.5V
23	GND
24	CSI0_DATA_EN
25	GND
26	CSI0_RST
27	CSI0_VSYNC
28	CSI0_HSYNC
29	GND
30	CSI0_PIXCLK
31	GPIO_6
32	GND
33	GPIO1_16

J6: LVDS (Hirose DF14-20P-1.25H)

Pin#	Function
1	3.3V

2	3.3V
3	GND
4	GND
5	TX0_N
6	TX0_P
7	GND
8	TX1_N
9	TX1_P
10	GND
11	TX2_N
12	TX2_P
13	GND
14	CLK_N
15	CLK_P
16	GND
17	TX3_N
18	TX3_P
19	DISP0_CONTRAST
20	PWM4

J7: I2C/GPIO (Molex 53047-0710)

Pin#	Function
1	+5V
2	+5V
3	+5V
4	GPIO9
5	I2C3_SDA
6	I2C3_SCL
7	GND

J9: MIC In (Molex 53047-0310)

Pin#	Function
1	GND_Analog
2	MIC In
3	MIC Det

J12: Boot Mode Switches (Molex 52991-0408)

Pin#	Function
1	EIM_A23
2	EIM_DA0
3	EIM_A22
4	EIM_DA1
5	EIM_A21
6	EIM_DA2

7	EIM_A20
8	EIM_DA3
9	EIM_A19
10	EIM_DA4
11	EIM_A18
12	EIM_DA5
13	EIM_A17
14	EIM_DA6
15	EIM_A16
16	EIM_DA7
17	EIM_EB3
18	EIM_DA8
19	EIM_EB2
20	EIM_DA9
21	EIM_RW
22	EIM_DA10
23	EIM_EB1
24	EIM_DA11
25	EIM_EB0
26	GND
27	EIM_LBA
28	EIM_DA12
29	GND
30	DSI_D1M
31	EIM_WAIT
32	EIM_DA13
33	GND
34	GND
35	EIM_A24
36	EIM_DA14
37	+3.3V
38	GND
39	+3.3V
40	EIM_DA15

J13: JTAG (Molex 53047-0810)

Pin#	Function
1	+3.3V
2	JTAG_TMS
3	GND
4	JTAG_TCK
5	GND
6	JTAG_TDO
7	JTAG_MOD
8	JTAG_TDI

9	JTAG_nTRST
10	BRESET_N

J14: Android Buttons (Molex 53047-0810)

Pin#	Function	IMX6 Pad Name
1	ON/OFF	
2	KEY_VOL_UP	GPIO_18
3	HOME	NANDF_D4
4	SEARCH	NANDF_D3
5	BACK	NANDF_D2
6	MENU	NANDF_D1
7	KEY_VOL_DN	GPIO_19
8	GND	

J15: Parallel RGB (Omron XF2M-4015-1A)

Pin#	Function
1	GND
2	GND
3	GND
4	DISP0_CNTRST
5	R0
6	R1
7	R2
8	R3
9	R4
10	R5
11	R6
12	R7
13	G0
14	G1
15	G2
16	G3
17	G4
18	G5
19	G6
20	G7
21	B0
22	B1
23	B2
24	B3
25	B4
26	B5
27	B6
28	B7
29	GND

30	DISP0_CLK
31	GND
32	DISP0_HSYNC
33	DISP0_VSYNC
34	DISP0_DRDY
35	I2C3_SCL
36	I2C3_SDA
37	PWM1
38	+5V
39	+5V
40	+5V

J16: MIPI (Molex 52991-0408)

Pin#	Function
1	CSI_D0M
2	+5V
3	CSI_D0P
4	+5V
5	GND
6	I2C2_SDA
7	CSI_D1M
8	I2C2_SCL
9	CSI_D1P
10	PWM3
11	GND
12	MIPI_BAKLGT_ON
13	CSI_D2M
14	NANDF_D5
15	CSI_D2P
16	DSI_D0P
17	GND
18	DSI_D0M
19	CSI_D3M
20	GND
21	CSI_D3P
22	DSI_CLK0P
23	GND
24	DSI_CLK0M
25	CSI_CLK0M
26	GND
27	CSI_CLK0P
28	DSI_D1P
29	GND
30	DSI_D1M

J17: COM1 & COM2 (Molex 53047-0610)

Pin#	Function
1	UART1 TX
2	+5V
3	GND
4	UART2 TX
5	UART2 RX
6	UART1 RX

J19: SATA Power (Tyco 640457-3)

Pin#	Function
1	+3.3V
2	GND
3	+5V

J22: CAN Interface (Molex 53047-0310)

Pin#	Function
1	CANH
3	GND
4	CANL

J23: PCIe (Molex 53047-0710)

Pin#	Function
1	+3.3V
2	PCIE_RXM
3	PCIE_RXP
4	PCIE_TXM
5	PCIE_TXP
6	GND
7	GND

J26: POE Output (Singatron SSW-1-04-01-T-S)

POE Output is meant to interface with BD POE module. If you need further details, please contact us.

5 Mounting

The overall dimensions of the Nitrogen6X board are 4.5”x3”

MOUNTING DIAGRAM COMING SOON